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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO.       |
|---|-------------|----------------------|-------------------------|------------------------|
| 10/687,573  | 10/15/2003  | Edward J. Seppi      | VM7036492002            | 7129                   |
| 55499 7590 03/13/2008<br>VARIAN MEDICAL SYSTEMS TECHNOLOGIES, INC.<br>c/o BINGHAM MCCUTCHEN LLP<br>THREE EMBARCADERO CENTER<br>SAN FRANCISCO, CA 94111-4067 |             |                      | EXAMINER<br>YUN, JURIE  |                        |
|   |             |                      | ART UNIT<br>2882        | PAPER NUMBER           |
|   |             |                      | MAIL DATE<br>03/13/2008 | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/687,573 | <b>Applicant(s)</b><br>SEPPI ET AL. |  |
|                              | <b>Examiner</b><br>Jurie Yun         | <b>Art Unit</b><br>2882             |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-13,21-25,27-34 and 39-56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-13,21-25,27-34 and 39-56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/12/07 &amp; 2/5/08</u> .                                   | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. The amendment filed 1/30/08 has been entered.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-13, and 39-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Keitaro et al. (JP 05-036368).
4. With respect to claims 1, 39, and 56, Besson discloses an apparatus for use in a radiation procedure, comprising: a radiation filter (Fig. 2 - 150) having a first portion (152) and a second portion (154), the first and the second portions forming a layer for filtering radiation impinging thereon; wherein the first portion is made from a first X-ray filtering material, and the second portion is made from a second X-ray filtering material (column 9, lines 45-60 & column 11, lines 21-28); a structure (112) having a cavity, the radiation filter (150) in operative association with the structure (via control unit - 110); and a disk located within the cavity, the disk having a first target material and a second target material (column 21, lines 52-57). The first and the second filter factor is applied automatically using a machine (control unit - 110 controls motor - 156). Besson does not specifically disclose the first target material corresponds with the first portion of the radiation filter, and the second target material corresponds with the second portion of

Art Unit: 2882

the radiation filter, wherein the disk having the first target material and the second target material is rotatable. Keitaro et al. teach a first target material (1) corresponds with a first radiation filter, and a second target material (2) corresponds with a second radiation filter, wherein the disk (3) having the first target material and the second target material is rotatable (paragraphs 0002-0005). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to employ a first target material corresponding with the first portion of the radiation filter, and a second target material corresponding with the second portion of the radiation filter, to enable generation of a desired quality of radiation, as taught by Keitaro et al.

It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114. In this case, it should be recognized that the wherein clause (wherein the disk...is rotatable) is functional in nature and does not distinguish structurally the instant claim over the prior art. See MPEP 2114 and 2111.04.

5. With respect to claim 2, Besson discloses the first and the second target materials (Fig. 28A, 2702 & 2704) are parts of a radiation source (Fig. 28B, 2802), and the apparatus further comprises the radiation source.

6. With respect to claim 3, Besson discloses a gantry to which the radiation source is secured (column 3, lines 53-54).

7. With respect to claim 6, Besson discloses the radiation source comprises an anode that includes a rare earth element, a platinum group metal, or combination thereof (column 21, lines 52-57).
8. With respect to claim 7, Besson discloses the radiation source comprises a voltage generator (column 13, lines 59-60).
9. With respect to claim 8, Besson discloses a switching element coupled to the voltage generator, the switching element configured to modulate the voltage generated by the voltage generator (column 35, lines 66+).
10. With respect to claim 9, Besson discloses an imager (114) for generating image data in response to radiation that has been filtered by the layer.
11. With respect to claim 10, Besson discloses the imager has a first image element for generating a first image data in response to radiation that has been filtered by the first portion of the radiation filter, and a second image element for generating a second image data in response to radiation that has been filtered by the second portion of the radiation filter (column 4, lines 39-64).
12. With respect to claim 11, Besson discloses a gantry, wherein the imager and the radiation filter are secured to the gantry (column 3, lines 53-54).
13. With respect to claim 12, Besson discloses the imager (114) is coupled to a support structure (128) for supporting an object (116) to which filtered radiation (132) is directed.

Art Unit: 2882

14. With respect to claims 13 and 42, Besson discloses either or both of the first and second X-ray filtering materials are selected from the group consisting of aluminum, copper, and molybdenum (column 21, Table 1).

15. With respect to claim 40, Besson discloses the filter 150 is wheel-shaped and rotates.

16. With respect to claim 41, Besson discloses the positioner comprises a motor (156).

17. With respect to claims 43-45, Keitaro et al. disclose the first target material (1) forms a ring configuration; the first target material and the second target material (2) are positioned concentrically relative to each other; and the first target material and the second target material are positioned relative to each other in a side-by-side configuration.

18. With respect to claim 46, Besson discloses an electron gun (Fig. 26, 2604) for sending electrons (2606) towards the first or the second target material (2608).

19. With respect to claims 47-50, Besson discloses an electron deflector for changing a path of the electrons; wherein the electron deflector comprises an electromagnetic field generator; wherein the electron deflector comprises a magnetic field generator; wherein the electron deflector physically deflects the electrons (column 45, lines 55+).

20. With respect to claim 51, Besson discloses a gantry to which the structure is secured (column 3, lines 53-54).

Art Unit: 2882

21. With respect to claims 52 and 53, Besson discloses the structure is part of a MRI (column 60, line 6) or PET machine (column 59, lines 61-62).

22. With respect to claim 54, Besson discloses the first x-ray filtering material comprises a k-edge filter (column 21, lines 16-20).

23. With respect to claim 55, Besson discloses the first x-ray filtering material has a x-ray transmission window that is above a k-edge, and the second x-ray filtering material has a x-ray transmission window that is below the k-edge (column 32, lines 25-27).

24. Claims 21-25 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besson (USPN 6,950,493 B2) in view of Albert (USPN 4,048,496).

25. With respect to claim 21, Besson discloses a method for generating image data, comprising: generating a first x-ray radiation using a target material; applying a first filter factor (Fig. 2 - 152) to the first x-ray radiation to obtain a first filtered radiation; generating a first set of image data in response to the first filtered radiation; generating a second x-ray radiation using a target material; applying a second filter factor (154) to the second x-ray radiation to obtain a second filtered radiation; and generating a second set of image data in response to the second filtered radiation; wherein the first and the second filter factor is applied automatically using a machine (control unit - 110 controls motor - 156). While Besson teaches a dual target configuration (column 21, lines 52-57), Besson does not specifically disclose a first target material and a second target material to produce the first and second x-ray radiation with the corresponding first and

second filter factors. Albert discloses a first target material corresponds with a first portion of a radiation filter, and a second target material corresponds with a second portion of the radiation filter (column 7, lines 56-68 & column 8, lines 59-64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to employ a first target material corresponding with the first filter factor, and a second target material corresponding with the second filter factor, to provide an X-ray source providing for selection of any of a plurality of different wavelength spectra to enhance imaging, as taught by Albert (column 2, lines 30-46).

26. With respect to claims 22 and 23, Besson discloses the first filter factor is applied by placing a first filter into the X-ray radiation, and the second filter factor is applied by placing a second filter into the X-ray radiation (column 9, lines 45-60).

27. With respect to claim 24, Besson discloses the first filter factor has a same filtering characteristic as the second filter factor (column 9, lines 45-60).

28. With respect to claim 25, Besson discloses the first filter factor is different from the second filter factor (column 9, lines 45-60).

29. With respect to claim 27, Besson as modified by Albert discloses the first filter factor and the second filter factor are applied by placing a first filter and a second filter, respectively, into the first and second X-ray radiation (Albert – column 7, lines 56-68 & column 8, lines 59-64).

30. With respect to claim 28, Besson discloses the first filter (Fig. 2, 152) and the second filter (154) are secured to a rotatable structure (filter 150 is wheel-shaped and rotates).



31. With respect to claims 29-33, Besson as modified by Albert discloses the first set and the second set of image data are generated using an imager; collecting the first set and the second set of image data from the imager; wherein the collection of the first and the second sets of image data is synchronized with positions of the first and the second filters; wherein the first set of image data is generated using a first imager, and the second set of image data is generated using a second imager; and collecting the first set and the second set of image data from the first and the second imagers, respectively (Besson - column 4, lines 39-64).

32. With respect to claim 34, Besson discloses either or both of the first and second filters comprise a material selected from the group consisting of aluminum, copper, and molybdenum (column 21, Table 1).

### ***Response to Arguments***

33. Applicant's arguments with respect to independent claims 1 and 39 have been considered but are moot in view of the new ground(s) of rejection. It is noted that the newly added recitation - "wherein the disk having the first target material and the second target material is rotatable" - does not provide for specific structure to carry out the function. It is noted that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. See MPEP 2114.

34. Applicant's arguments filed 1/30/08 regarding independent claim 21 have been fully considered but they are not persuasive. Applicants argue:

Claim 1 also recites a first target material that corresponds with a first portion of a radiation filter, and a second target material that corresponds with a second

portion of the radiation filter. Applicant agrees with the Examiner that Besson does not disclose these limitations. According to the Office Action, Albert discloses the above limitations, and it would have been allegedly obvious to modify Besson to employ a first target material corresponding with a first portion of a radiation filter, and a second target material corresponding with a second portion of a radiation filter "to enhance versatility of the equipment." (p.3 of Office Action). Applicant respectfully disagrees. Albert teaches providing different targets 54, 61 so that the testing equipment can be configured to test an unknown substance 13 (see column 2, lines 10-18, and figure 1) - i.e., different targets are needed because the chemical constituents are unknown in the sample 13. On the other hand, Besson is directed to a system for imaging objects (e.g., human - see figure 2), for which the compositions are generally well known. Thus, Besson is not concerned with providing enhance versatility for the test equipment.

As similarly discussed with reference to claim 1, Besson does not disclose or suggest these limitations, and is not concerned with enhancing versatility of an equipment. Thus, it would not have been obvious to combine Albert with Besson in the purported manner described in the Office Action.

The Examiner respectfully disagrees. Albert teaches, column 2, lines 27-46:

Moreover, an X-ray source producing selectable wavelengths and intensities can offer important advantages in contexts other than the spectrometric analysis of substances as discussed above. In radiology as used for medical purposes or for the inspection of industrial parts, for example, the image which is obtained of the internal structure of a subject is useful only to the extent that different internal elements of the subject are distinguishable in the image. The contrast in such an image, between different internal areas of the subject, is again strongly influenced by the wavelength of the incident X-rays. The particular wavelength which provides the best contrast in an image of a medical patient between bone structure and the surrounding soft tissue may not be the same wavelength which provides the best contrast in distinguishing tumorous tissue from adjacent normal tissue. Thus, the versatility of radiology equipment of this kind may also be greatly enhanced by an X-ray source providing for selection of any of a plurality of different wavelength spectra.

Besson is concerned with multi-spectral CT imaging of patients, and thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Besson to employ a first target material corresponding with the first filter factor,

and a second target material corresponding with the second filter factor, to provide an X-ray source providing for selection of any of a plurality of different wavelength spectra, as taught by Albert (column 2, lines 27-46). This provides for the ability to enhance contrast in distinguishing bone from soft tissue and/or tumorous tissue from adjacent normal tissue, as cited above, by being able to select the desired wavelength dependent on the application.

### ***Conclusion***

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jurie Yun whose telephone number is 571 272-2497. The examiner can normally be reached on Monday-Friday 8:30-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jurie Yun/  
Primary Examiner, Art Unit 2882

March 3, 2008